EFFECTIVENESS OF LAMAZE TECHNIQUE ON THE LEVEL OF ANXIETY, INTENSITY OF LABOUR PAIN AND DURATION OF FIRST STAGE OF LABOUR IN THE PRIMIGRAVIDA MOTHERS

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ABSTRACT

Labour is the most exciting and most painful situation for a women. Women have different threshold level of pain and cope with the pre-labour anxiety in different ways. This study aims to avoid painful experience of the mother during labour.

Seventy eight primigravida mothers were selected by weekly allocation of subjects in control and experimental group. The mother in both the groups were introduced to the investigator and explained about the research project. In the experimental group, the mothers were oriented to the ward and daily routine, explained about labour process and taught selected Lamaze techniques (effleurage massage, slow breathing exercise and focusing on picture of baby) after which assessment of anxiety was done. The mothers of control group was assessed without intervention for the level of anxiety and routine care was given. First assessment of labour pain was done at 3-4 cm. dilatation of cervix, second assessment done after 2 hours of first observation and third assessment was done after 2 hours of second observation in both the groups. Duration of active phase of first stage of labour was assessed by partograph from 3-4 cm. to full dilatation of cervix.

Experimental group showed that there is significant difference of anxiety ($p < 0.001$), pain ($p < 0.001$) and duration of active phase of first stage of labour ($p < 0.001$) in comparison with control group. Study concluded that selected Lamaze technique reduces the level of anxiety and intensity of labour pain during first stage of labour among primigravida mothers.

KEYWORDS: Lamaze technique, Effleurage massage, psychological support, Labour pain.

1. INTRODUCTION:

Pregnancy and Childbirth is a special events to the mother and the family. Childbirth involves labour process and delivery of the baby.

Labour pain is an unpleasant and distressing situation of the mother during the process of labour. It is a subjective and personal experience. There are many factors influencing the labour pain such as coping ability, sensitivity, past experience of pain, birth environment, psychological factors, etc. Labour pain is the most severe pain a woman can experience throughout her life. Severity of pain and duration of labour psychologically affects a mother. It may lower the confidence, self-esteem and increase the level of anxiety.

Hydrotherapy, hypnotherapy, patterned breathing, relaxation and visualization are birthing techniques. These techniques can increase the production of endogenous endorphins that bind to receptors in the brain and relieve pain. Other pain management methods of comfort therapy like massage can provide pain relief and reduce the need for narcotics analgesia by naturally creating competing impulses in the central nervous system that can prevent the painful stimuli of labour contractions from reaching the brain.[2]

Lamaze method is a technique of prepared labour and delivery. As it uses the mind (psyche) to prevent labour pain, it is also known as psychoprophylactic method. Lamaze childbirth method can be used as an alternative to medical intervention during delivery. Although the method was popularized by Dr. Ferdinand Lamaze, a French Obstetrician, it was originally developed in Russia (based on conditioning studies). Dr. Lamaze developed his own system of painless childbirth after watching a woman give birth. The system consists of following methods:

a. **Cutaneous Stimulation:** includes Effleurage massage, sacral pressure, thermal stimulation and positioning.

b. **Distraction:** includes Breathing technique: all breathing begins with a deep cleansing breath. Inhale through the nose (if possible), keeping shoulders relaxed. Exhale through the mouth, letting go of all the tension from the body. Slow paced breathing, Modified paced breathing and Patterned paced breathing (for first stage of labour) and Expulsion breathing (for second stage of labour), Focal point: to help a woman direct her thoughts away from contraction, a focal point is provided which is an object in which the woman focuses during contraction. It includes Imagery and Music

c. **Reduction of anxiety:** providing information to the woman regarding the labour process and presence of support person enhances self-confidence of the mother.

The advantages of this procedure include the avoidance in the use of medications which may disturb the physiology of the mother and reduction in the chances of fetal depression from narcotics.

1.1 Objectives of the study

- To develop and implement the protocol of " selected aspects of Lamaze technique" to the primigravida mothers on admission at the CLR, Nehru Hospital, PGIMER, Chandigarh.

- To assess the effectiveness of Lamaze technique on level of anxiety, intensity of labor pain, and duration of first stage of labor among experimental and control group of primigravida mothers admitted at the CLR, Nehru Hospital, PGIMER, Chandigarh.

2. METHODOLOGY:

2.1 Research Approach: Quantitative research approach

2.2 Research Design: True experimental study (Post-test only design).

2.3 Research Setting: The research was conducted in Clean Labour Room, Nehru Hospital, PGIMER, Chandigarh.

2.4 Accessible Population: Primigravida mothers 37 to 40 weeks of gestation were admitted in the CLR, Nehru Hospital, PGIMER, Chandigarh (18th July to 8th September 2017)

2.5 Method of Sampling : Total Enumeration technique was used to draw sample for the present study. Block randomization done, Samples were weekly allocated in control and experimental group (1st group was selected by lottery method)

2.6 Sample size: The sample size was a 78 primigravida mothers (39 in each group).

2.7 Process of data collection:

Prior permission was obtained from the department of Obstetrics and Gynecology, PGIMER and on duty doctors were also informed. Investigator introduced herself to the participants and the objectives of the study were explained and written informed consent was taken from the primigravida mothers.

This was divided into four phases.

Phase I: Identification of the primigravida mothers; By using socioeconomic and clinical profile proforma.

Phase II: Orientation, Explanation and Demonstration; The subjects were divided into two groups i.e. experimental and control group by weekly allocation

(first group was selected by lottery method which was control group).

Experimental group:
The investigator introduced herself to the primigravida mother and gradually moved to the interview. Then the investigator was oriented the mother to the ward it's routine, introduced health personnel and explained to her the labour process, effleurage massage, slow breathing exercise and focusing on picture of baby by showing flip chart and demonstration was given when needed.

Description of techniques included:

1. Effleurage massaging
Slow and light massage on the abdomen during each contraction with the palm or finger tips in circular motion and in downward to upward direction, single stroke.

2. Slow breathing exercises
a) Deep Cleansing Breath, at beginning of each contraction

b) Inhale (through nose) up to a count of 4 (1,2,3,4)

c) Exhale through mouth to a count of 4,3,2,1

d) Inhale/exhale throughout the contraction

e) When contraction ends, Deep Cleansing Breath repeated.

3. Focusing on the particular object
Mother was asked to focused on a picture of a baby pasted on the wall in front of the mother.

Control group: Routine care, assessment of maternal and fetal condition and investigations on admission (if needed) was provided to them.

Phase III: Implementation;
After the explanation and demonstrations given by the investigator, mother were asked to perform each step during first stage of labour, when contraction begins, and continue until the contractions stopped. It followed the sequence:

1. Effleurage massage on abdomen
2. Slow breathing exercises
3. Focusing on picture of baby

After the contractions stopped, the mother was asked to take a deep breath. The steps were again performed by the mother when the next contraction began.

In control group:
Routine care included, monitoring of health status of mother and baby, preparation for labour and administration of medication was provided to them.

Phase V: Evaluation –In this phase, follow up by investigator was done to assess the effectiveness of Lamaze techniques.

The investigator assessed the following parameters:
A. Assessment of Anxiety:
In experimental group: it was assessed using the STAI (State Trait Anxiety Inventory) after orientation of ward set-up, health personnel and explanation of labour process and other selected techniques in experimental group.

In control group: anxiety was assessed after introducing and explaining about the research project.

B. Assessment of Pain:
It was assessed using the Numeric Pain Scale after every 2 hours during active phase of first stage of labour. 3 observations were made in both groups (control and experimental group):

1st observation - at 3-4 cm dilatation of cervix,

2nd observation - done after 2 hours of 1st observation

3rd observation- done after 2 hours of 2nd observation

C. Duration of first stage of labor:
Duration of first stage of labour was assessed using the WHO partograph in both the groups (control and experimental group) from 3-4 cm to full dilatation of cervix.

3. RESULTS:
3.1 Sociodemographic variables:
Table 1 shows the absolute figures of the frequency and the percentage of those frequencies with respect to the total number of subjects. The experimental and control group were quite homogenous in terms of age, religion, education, employment, number of family members, percapita income, marital status, and type of family as their p value was not less than 0.05, It shows that both the groups

are comparable.

This table shows majority (53.8%) of the women belonged to age group between 26-30 years in both the groups.

It also indicated that majority of the women were highly educated as 51.3% women of the experimental group and 43.6% women of the control group were post graduates.

Seventy nine percentage of the women in control group and 74.4% in the experimental group were housewives, making the majority among the study subjects.

Table 1: Socio demographic profile of the study subjects (Control and Experimental group)

Variables	Control group (n=39) n(%)	Experimental group (n=39) n(%)	χ^2(df) p value
Age (in years) #			4.43^f
• 20-25	12 (30.8)	17 (43.6)	(02)
• 26-30	21 (53.8)	21 (53.8)	0.10
• >30	06 (15.4)	01 (02.6)	
Religion			2.51^f
• Hindu	32 (82.1)	28 (71.8)	(02)
• Sikh	07 (17.9)	08 (20.5)	0.28
• Others a	-	03 (07.7)	
Education			2.55
• Secondary	01 (02.6)	03 (07.7)	(03)
• Higher secondary	09 (23.1)	09 (23.1)	0.21
• Graduate	12 (30.8)	07 (17.9)	
• Post graduate and above	17 (43.6)	20 (51.3)	
Occupation			3.06^f
• Housewife	31 (79.9)	29 (74.4)	(02)
• Government service	01 (02.6)	05 (12.8)	0.21
• Private service	07 (17.9)	05 (12.8)	
No. of family members			1.51^f
• 2	05 (12.8)	03 (07.7)	(03)
• 3-4	12 (30.8)	14 (35.9)	0.67
• 5-6	12 (30.8)	15 (38.5)	
• >6	09 (25.6)	07 (17.9)	
Percapita income (in Rupees)$			0.23
• <5,000	11 (28.2)	10 (25.6)	(02)
• 5,001-10,000	16 (41.0)	15 (38.5)	0.89
• >10,000	12 (30.8)	14 (35.9)	
Marital status			
• Married	39 (100)	39 (100)	
Family type			0.21
• Nuclear	15 (38.5)	17 (43.6)	(01)
• Joint	24 (61.5)	22 (56.4)	0.64
Residence			1.01
• Rural	13 (33.3)	09 (23.1)	(1)
• Urban	26 (66.7)	30 (76.9)	0.31

[a]Muslims and Christian, f- fisher's exact test [#] Age in years (Mean ± SD) = 26.51 ±3.341, Range (20-36) [$]Percapita income in rupees (Mean ± SD) = 14857.92 ±25458.887, Range (1,000 –20,0000)

3.2 Frequency of anxiety level in primigravida mother

Table 2: Frequency of anxiety level of the subjects in both groups using STAI (State and Trait Anxiety Inventory)

Score for level of anxiety	State anxiety		Trait anxiety	
	Control (n=30) n(%)	Experimental (n=39) n(%)	Control (n=39) n(%)	Experimental (n=39) n(%)
Mild (20-40)	02 (05.1)	37 (94.9)	20 (51.3)	25 (64.1)
Moderate (41-60)	32 (82.1)	02(05.1)	19 (44.2)	14 (35.9)
Severe (61-80)	05 (12.8)	---	---	---
χ^2/ fisher's exact test (df) p value	66.52 (02) <0.001^f		01.31 (01) 0.359^f	

Table 2 shows the frequency of level of anxiety (state and trait anxiety) on the basis of mild (20-40), moderate (41-60) and severe (61-80).

Majority of the mothers reported moderate anxiety (84.9%) in control group whereas 94.9% mothers reported mild anxiety in experimental group. Chi square test was used which showed highly significant results between control and experimental group (p <0.001).

Majority of the mothers in control (51.3%) and experimental (64.1%) groups showed mild trait of anxiety. Chi square test was used for trait anxiety which did not show significant difference (p 0.35) between both the groups.

3.3 Comparison of anxiety level between control and experimental group
Table 3 depicts the comparison of anxiety levels between both the groups. In control group mean score rank for state anxiety was 58.60 whereas the mean score in experimental group was 20.40. Mann Whitney test was used which showed highly significant results for state anxiety between both the groups (p <0.001).

Mean rank score for trait anxiety in control group was 42.79 whereas mean score in experimental group was 36.21. Mann Whitney test was used which did not show significant results for trait anxiety between both the groups (p 0.199).

Table 3: Comparison of score for anxiety level of the subjects between control and experimental group using STAI (State and Trait Anxiety Inventory)

Anxiety level	State anxiety		Trait anxiety	
	Control group (n=39)	Experimental group (n=39)	Control group (n=39)	Experimental group (n=39)
Median anxiety score	55.00	33.00	40.00	38.00
sIQR	50-59	30- 34	36-44	32-44
Mean rank	58.60	20.40	42.79	36.21
Mann whitney value p value	15.50 <0.001	632 0.199		

3.4 Frequency and percentage of intensity of labour Pain of the subjects in control and experimental group using Numeric Pain Rating Scale
Assessment of pain done by rating the *numbers from "0" to "10". No pain (0 score), mild pain (1-3 score), moderate pain (4-6 score), severe pain (7-10 score). Higher score indicated greater pain intensity.

3.4.1 Frequency and percentage of intensity of labour Pain of the subjects during 1st observation
Figure 1 revealed that majority (61.5%) of the mothers felt moderate pain in control group and 76.9% mothers felt moderate pain in experimental group.
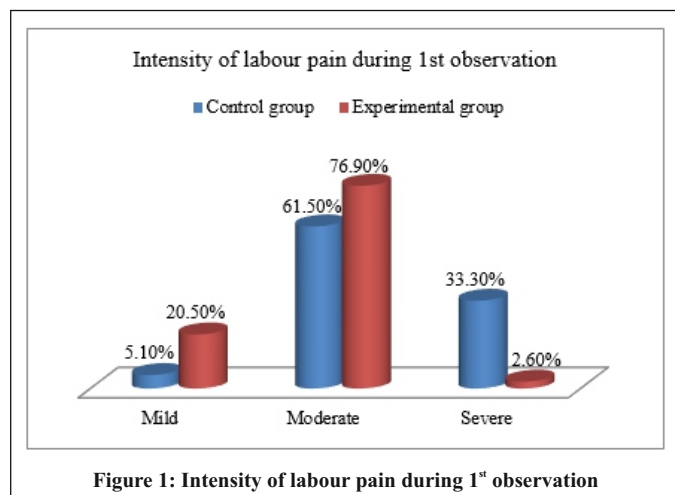
Figure 1: Intensity of labour pain during 1st observation

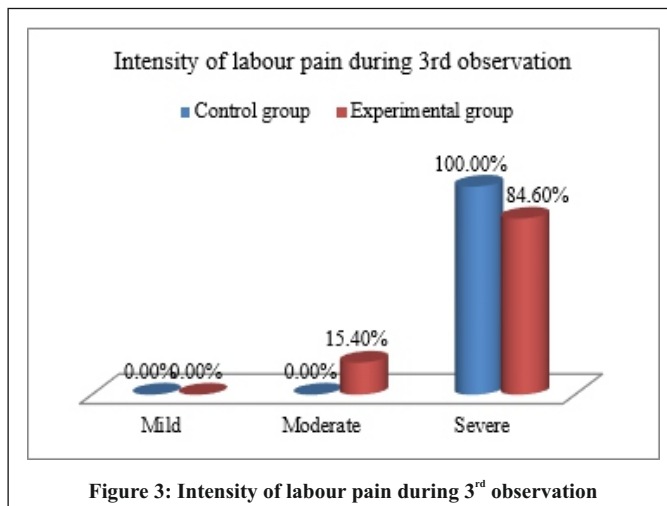### 3.4.2 Frequency and percentage of intensity of labour Pain of the subjects during 2nd observation
Figure 2 shows that 89.7% mothers of control group felt severe pain whereas 87.2% mothers of experimental group reported moderate pain.
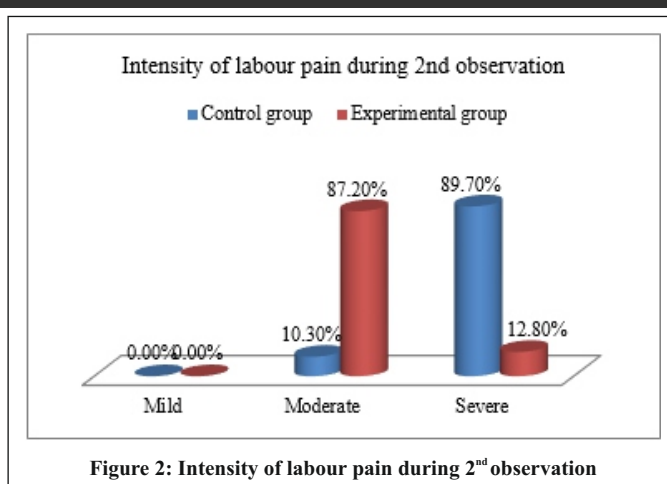
Figure 2: Intensity of labour pain during 2nd observation

### 3.4.3 Frequency and percentage of intensity of labour Pain of the subjects during 3rd observation
Figure 3 depicts that all (100%) the mothers in control group reported severe pain whereas majority (84.6%) of the mother in the experimental group reported severe pain in experimental group.

Figure 3: Intensity of labour pain during 3rd observation

3.5 Frequency (in percentage) of duration for active phase of first stage of labour in control and experimental groups
Figure 4 shows the frequency of duration (<3, 3-6 and >6 hours) of active phase of first stage of labour in control and experimental groups. Majority of the mothers (51.3%) in control group and 66.7% mothers of experimental group had between 3-6 hours of duration of active phase of first stage of labour.
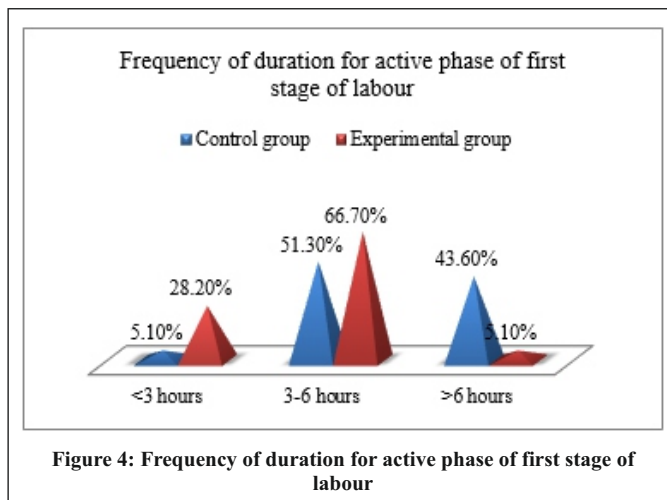
Figure 4: Frequency of duration for active phase of first stage of labour

3.6 Comparison of intensity of labour pain between control and experimental group

Table 4: Comparison of score for intensity of labour Pain between Control and Experimental groups using Numeric Pain Rating Scale

Pain IntensityScore	1st Observation during 3-4 cm dilatation of the cervix (O1)		2nd Observation after 2 hours interval of 1st observation (O2)		3rd Observation after 2 hours interval of 2nd observation (O3)	
	Control n=39	Experimental n=39	Control n=39	Experimental n=39	Control n=39	Experimental n=39
Median	5.0	2.0	8.0	5.0	10.0	8.0
IQR	5-7	2-2	7-9	5-5	9-10	7-8
Mean rank	56.37	22.63	55.37	23.63	55.80	23.12
Mann whitneyvalue	102.50	141.50	121.50			
p value	<0.001		<0.001		<0.001	

3.7 Comparison of duration of active phase of first stage of labour between control and experimental group

Table 5 depicts that the comparison of duration of active phase of first stage of labour between both the groups in hours (<3, 3-6 and >6 hours). Median of both the groups was 02 IQR of the control group was 02-03 whereas IQR was 01-02 in mothers of experimental group. Mean rank of control group was 49.15whereas mean rank of experimental group was 29.85. Mann Whitney test was used which showed a significant difference between both the group (p <0.001).

Table 5: Comparison of duration of active phase of first stage of labour between control and experimental group

*Duration of active phase of first stage of labour	Control group n=39	Experimental group n=39
Median of duration of active phase of first stage of labour (in hours)	02.00	02.00
IQR	02-03	01-02
Mean rank	49.15	29.85
Mann Whitney U value	384.00	
p value	<0.001	

4. DISCUSSION:

Pre-labour preparation and psychological support play vital role in reducing anxiety and fear of mother during labour process.

Present study showed significant difference (<0.001) for level of anxiety.

A study Conducted by Kathrin H. Stoll, and Wendy Hall, in 2015 on Childbirth Education and Obstetric Interventions Among Low-Risk Canadian Women: reported that nulliparous women who were not attending the class had anxiety level higher than that of nulliparous woman who were attending the class at significant deference of p value (p 0.007).

Conducted by M Firouzbakht, et, al. in 2015 on The Effectiveness of Prenatal Intervention on Pain and Anxiety during the Process of Childbirth-Northern Iran: Result showed that The anxiety level in case group (who received education) was 14.47 (4.69) and in control group it was 16 (4.86), (P<0.001). 7

Present study showed significant difference (<0.001) for intensity of labour pain This can be supported by Neetu et,al. in 2013 on effectiveness of abdominal effleurage on labour pain intensity and labour outcomes among nullipara mothers during first stage of labour the mean pain score in experimental and control group was shown significance difference at p<0.001.

A study to assess the effectiveness of pattern breathing technique in reduction of pain during first stage of labour among primi gravida in Pune, was conducted by Savita Dhiwar in 2011. Supported the result of present study by showing Result of all mean post test score of control and experimental group was significantly different at p<0.001 which shows less pain in experimental group compare to control group.

Result of present study for the duration of active phase of first stage of labour showed significant difference (p<0.001) between control and experimental group.

Study of Kaur K. et, al. on pace breathing exercises also supported the findings of duration of first stage of labour. Result showed that there is a statistical significant difference (p<0.001).

A randomized control trial (2016) conducted by Nahid Bolbol-Haghighi,et al to evaluate the effect of massage therapy on the duration of labour. The results of this study supported the present study by showing the duration of first and second stage of labour in the massage receiving group is significantly decreased compared to the test group (p 0.004 and p 0.02, respectively).

5. CONCLUSION:

Lamaze technique is Non-pharmacological, non-invasive and self-administered technique. It does not consume more time of health personnel. There is no adverse effects to the mother and fetus and it is easy and cheapest method to help the mother to overcome anxiety and intensity of pain and also reduces the duration of first stage of labour.

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